

The

Ballarat

Naturalist

March 2005



Noisy Scrub-bird:
a rare WA endemic

Western Australian Adventure

Speakers: Club Members

Introduction: In 2004 several members spent time in WA; Carol Hall participated in a CALM research expedition to Cape Arid National Park in May, and in September-October Carol, Maureen Christie, John and Elaine Gregurke and Claire and Peter Dalman attended the Australian Naturalists' Network meeting in Perth. Maureen flew to WA and enjoyed the pre-tour and post-tour segments, while the rest of us drove over and did our own exploring, coming together for the ANN core program, which was attended by around 70 field naturalists; the largest component was from Victoria.

Maureen Christie: Maureen explained the organisation of the program; the pre- and post-tour components consisted of coach travel and motel stays to venues such as the Pinnacles, Dryandra Forest and the Stirling Ranges. The 10-day core program utilised coach travel to venues within the greater Perth region, including flora and fauna reserves, the Aquarium, Kanyana Wildlife Rehabilitation Centre, spotlighting to see woylies and quenda at Karakamia, Penguin Island and the Gravity Discovery Centre. Participants stayed either at the Perth International Tourist Park in cabins, their tents, caravans or camper-trailers, while others stayed at a nearby motel. Social events included a spit roast at a wildlife education centre, a lecture on "Sandgropers" (the editor confesses that she had no idea that such invertebrates actually existed: this was a serious natural history talk!!), a BBQ on the night of our spotlighting walk and a final dinner. Excellent organisation by Eddie and Joy Dell, and the wide general knowledge of Eric McCrum as commentator made for a superb experience.

Carol Hall: Paying volunteers with suitable interests or skills can join the WA Dept. of Conservation and Land Management on their research expeditions. Using slides, I explained the nature of the work undertaken at Cape Arid National Park 120 km east of Esperance where we camped for a week. Having brought a trailer-full of cage and

Elliot traps with us, the first morning was spent mixing bait (peanut butter, oats and fish oil) and setting the traps adjacent to 4WD tracks in the park, and pit traps already set in the ground were activated. The botanists set up quadrats in areas of varying vegetation. Each morning the traps would be checked, any creatures noted and released, and the traps re-baited; any dead creatures would be preserved for the WA Museum.

The botanists would continue with quadrat work, bringing specimens back for pressing and eventual storage at the WA Herbarium. Highlights of the trapping included the 12gm Honey Possums, Western Pygmy Possums and frogs, but there were plenty of introduced house mice too. Sadly no Chuditch (Western Quoll) were found: re-introduced to the Park in 1998, successive surveys had found falling numbers, and we found none. Listening surveys for the endangered Western Ground Parrot resulted in an estimate of 8 individuals calling at dusk as they arrived at their feeding grounds.



Honey Possum

In the afternoons we would take the 4WDs exploring, along the beach to the granite headlands of Cape Arid (verticordia were a new flower genus for me) and to abandoned homesteads where early pioneers had tried to clear the coastal heath—banksias, grass-trees, macrozamia, calothamnus (clawflowers).



Quenda

Such a trip provided a unique insight into the WA endemics and a better understanding of the great differences between east and west Australia. Further immersion in WA ecology was provided by my second visit to Perth for the ANN meeting. Here we realised that much of WA is underlain by ancient granites and gneisses between 2400 million and 3700 million years old, (Pre-Cambrian) uplifted, worn down by ancient glaciations and periods of intense weathering, and subjected to fluctuations in sea levels. Because of its relative stability and lack of disruptive geological episodes such as vulcanism, this huge region today has the greatest biodiversity of anywhere in Australia, notwithstanding its relatively infertile soils.

The landscape we see today around Perth is dominated by the coastal plain consisting of limestone and recent sands overlying the basement granites, while the hills behind the city result from uplift along the Darling Fault, creating the Darling Plateau in those ancient granites and gneisses. Thanks to previous wetter tropical climates, leaching of soluble Ca, Mg, Na and P from these rocks left behind aluminium and iron creating a hard capping called laterite (on which the jarrah forest grows) and which has given rise to bauxite mining. Recent rises in sea level drowned the lower Swan valley, leaving Rottnest as an island and resulting in the wide estuary we see today on which Perth stands.

Prior to arriving in Perth I explored the Esperance, Albany, Pemberton and Karri forest areas, and saw excellent examples of thrombolites (the freshwater equivalent of stromatolites) at Lake Clifton south of Perth which nestles between the lines of sand dunes bordering the coast.

John Gregurke: The Stirling Ranges, 540 million years old, are one of three outcrops of much younger rocks in WA (the others being the Porongorups and Barren Ranges). Named for the first Governor of WA, they consist of sedimentary rocks, metamorphosed in places to form quartzite, slate and phyllite. This is the only place in WA to receive snow! Maximum precipitation is received in winter, over 1000mm falling. The Ranges are home to 1500 plants, 80 of them endemic; 60 species of orchids occur here.

John showed us slides of various orchids, the unusual *Kingia australis* with its drumstick flower heads, the Mt. Stirling coneflower, banksias including the scarlet *B. Coccinea* (Albany Banksia) and Mountain Bells (*Darwinia* sp.)—10 species occur here, different ones on different peaks.

Gastrolobium and Oxylobium species growing in WA contain sodium fluoroacetate which we are more familiar with as the poison 1080. This phenomenon means that creatures native to WA are immune to its effects so CALM began a program called Western Shield some years ago, a policy of aerial baiting to rid the arid areas of foxes and feral cats. This has been shown to be highly successful, with numbers of the smaller marsupials rising rapidly. Species from captive breeding programs and from islands off the WA coast where there were no cats or foxes have been re-introduced to mainland areas they formerly inhabited. The presence of 1080-bearing plants also meant that such areas were not cleared for grazing as the poison affected sheep and cattle—thus preserving the native vegetation of these regions.

John and Elaine also explored the Norseman and Kalgoorlie areas prior to arriving in Perth, and later visited the Dryandra Forest.



Bob-tail Lizard

Claire and Peter Dalman: Shots of ANN activities revealed plants of the Darling scarp—orchids, Wandoo (a white, powdery-barked eucalypt), and Silver Gulls and their chicks nesting on Penguin Island (where pelicans were also breeding). Claire and Peter explored north of Perth after ANN, visiting Kalbarri and Shark Bay, and also staying at the Western Flora Caravan Park at Eneabba whose proprietor took his visitors on wildflower walks. The Dalmans gave us an enthusiastic description of this experience, then showed us a fascinating segment of a video which they had purchased showing us many of the flowers of the heathlands of the district, most of them identified on screen. Again there is huge biodiversity, with 29 species per m² but only 3% of this habitat left after clearing.

ANN's final session was a visit to King's Park & Botanical Garden in Perth for the last day of the annual wildflower show. Amongst the displays in the trade marquees was an impressive show from the King's Park scientists explaining the discovery of the prime importance of smoke to the successful germination of native plants after fire—and how this discovery has proved so valuable in their efforts to ensure the survival of native plants. A South African scientist discovered the benefit and it was followed up in King's Park, where it was realised that smoke, not heat or ash held the key to germination.

Over 400 species of seeds respond to smoke treatment. Smoke can be applied in water (i.e. smoke water) or in aerosol form to seed trays, bushland soil or directly applied to seeds. Research has found that smoke-responsive native species occur throughout temperate southern and arid Australia. Even species from habitats which are not fire-prone (e.g. the alpine herbfields of Tasmania) germinate well following application of smoke.

Research at King's Park has shown that after a bushfire, smoke is deposited as a residue on soil and is then washed through to the soil seed bank when autumn rains arrive (in southern Australia). It has also been shown that smoke-like chemicals are released from the soil organic layer following physical disturbance, leading to a promotion of germination similar to that following a bushfire.

Brochures were available from the display explaining how to make smoke, demonstrating suitable hardware, and the plants and woody material suitable to use (and which *not* to use due to toxicity), how to make the smoke water and how to apply it; Peter handed round a small bottle containing the cloudy liquid for us to smell: a very sharp distinctive odour.

Claire had prepared visual materials on "honky nuts" - the fruit from the marri tree *Eucalyptus calophylla*; quan-dongs (we were offered a taste of jam) and the shelly blocks of building material from Shelly Beach, Shark Bay.



E. calophylla and "honky nuts"

We welcomed Bev Culvenor and Elvyne Hogan from the Bendigo FNC to our meeting; they had also attended the ANN in Perth, and Elvyne had also participated in a CALM expedition some time ago, so both were keen to share our experiences.

The material presented in this meeting was only a fraction of our combined adventures in WA, and the whole experience has led to much reminiscing since we returned.

Carol Hall.

Bellarine Peninsula Excursion.

Leader: Carol Hall.

After recent heavy rainfall, the farm dams were full and the country had a green tint on our trip to the Bellarine peninsula. Various coloured WA flowering gums *Corymbia ficifolia* were in bloom. As we neared Geelong a flock of Yellow-tailed Black Cockatoos flew overhead. Because Deviation Road at Fyansford was closed we made a detour around the now closed Batesford limestone quarry. A brief stop was made at the Cheetham salt pans at Moolap. Large numbers of Red-necked Avocets and Black-winged Stilts were seen here. There were also Chestnut Teal.

Birds seen at Lake Lorne at Drysdale included Little Pied and Little Black Cormorants, Blue-billed and Black Ducks, Chestnut and Grey Teal and Hoary-headed Grebes. White Ibis, White-faced Heron, Masked Lapwings, Magpie Larks and swallows were also seen, as well as three hares in a nearby paddock.

Members were keen to inspect an historic steam train that had arrived at the Drysdale station. The Bellarine Peninsula Railway runs a train along the sixteen kilometre track between Drysdale and Queenscliff. A rail trail has been made on the Geelong side of Drysdale where the rail track has been removed. At nearby McCleods Waterholes, Wood Ducks, Superb Fairy Wrens and a Royal Spoonbill were seen. Willows, poplars and oak trees had been planted around the waterholes. Several attractive Rough-barked Manna Gums were noticed. Fungi that were seen included Puffballs on the ground and Scarlet Bracket fungi on a dead willow branch.

At the Edward Point State Faunal Reserve near St. Leonards, Pobblebonk frogs were calling when we arrived. This reserve consists of a sand spit and a small island which shelters the shallow waters and salt marsh of Swan Bay Marine Reserve.

We walked along a sandy track through tall Coast Tea-tree mixed with Wirilda wattle. Other wattles that were seen included Golden, Hedge and Coast wattles. Birds seen included a Horsfield Bronze Cuckoo and some Silver-eyes. Orange-bellied Parrots have been sighted on the Edward Point salt marsh in the wintertime. The locally rare Wire-leaved Mistletoe *Amyena preissii* occurs on the Wirilda wattle in the area. Large numbers of orange coloured flowers were blooming on the mistletoe and New Holland Honey-eaters were later seen feeding among them.

When we arrived at the beach damage from the recent storms was evident. Sand had been washed away and trees and shrubs nearest the water were uprooted. There were not many sea birds on the calm sea. Juvenile and adult Pacific gulls were noticed. A juvenile Pacific gull was walking along the waterline carrying a piece of seaweed in its beak. Other birds seen near the beach were Straw-necked Ibis, Grey Fantails and Red Wattle-birds. A dead Spotted Turtle-dove was washed up on the beach.

Les Hanrahan.

February Meeting Points

35 members and visitors were welcomed.

- Total Fire Ban: That Field Naturalists' Club of Ballarat excursions be cancelled when a Total Fire Ban is declared in the Central fire ban area or in the area of the excursion destination.
- The committee will decide on a method of selling the books donated by Kit Williamson and excess library books

Field Reports

- Carol Hall: Mid-January, 6 Southern Giant Petrels feeding on carrion at Allestree Beach, Portland.
- John Mildren: Peregrine Falcon flying with pigeon near T&G building.
- Ken McDonnell: 6 Blue-billed ducklings seen on Lake Wendouree. Piece of scoria showing lava structure found on road in Creswick area.
- Elspeth Swan: Peregrine Falcon chick which was raised in Sturt St. after being rescued several times in the median strip had to be taken into care (Martin Scuffins - Central Highlands Bird of Prey Shelter)) after flying into Craigs Gaming Room.
- Fran Hanrahan: In 2004, a pair of swans on a Dunnstown dam produced two sets of young; the day the second one hatched, the first disappeared.
- Tony Johns: Colignan, NW Vic. Over Xmas-New Year - Willy Wagtails nests (3); two discovered along river track each with their nestlings; one nest at eye level, next at about half a metre off ground, other nest on metal rod suspended from roof in shed. Whistling Kite being harassed by White-faced Heron and Magpie. Flock of Major Mitchell Cockatoos (Almond plantation nearby). And I caught the biggest European Carp I've ever caught in 25 years - 5.5 kilos.
- John Gregurke: Hundreds of Pink-eared Duck at Lake Burrumbeet. Black Duck with 10 ducklings in Pauls Wetland.

Dangerous Climate Change and Climate Stabilisation

At the beginning of February 2005 an international 3-day meeting in Exeter, England hosted by the Bureau of Meteorology focused on what constituted dangerous climate change and whether that change should be stabilised at no more than an increase in global average temperature of 2°C above pre-industrial levels.

The following points are drawn from a paper entitled *Responses of Species to Changes in Climate Determine Climate Protection Targets*.

The history of the Earth's climate has been characterised by many changes. But the extent and the rate of current climate change exceeds most natural variation. By comparing northern hemisphere tree-rings over the last 1000 years scientists found that the magnitude of 20th century warming- 0.7°C - is the largest and exceeds by far all natural climate variations during this period. The 1990s are the warmest decade of the century. This rapid warming has continued during the first years of the 21st century and a rise of a further 0.6°C is predicted.

The first signs that this warming causes changes in ecosystems come from the high latitudes and alpine systems. Permafrost began melting in the middle of the 19th century and warming has since accelerated. Ice sheets are thinner, and glaciers have retreated; the latter is especially noticeable in the tropics where it is estimated that Mt. Kilimanjaro will be ice-free by 2020. In mountain ranges such as the Himalayas, unique alpine ecosystems, local biodiversity and run-off volumes are threatened, as are the livelihoods of many people especially in regard to water availability downstream.

Climate change has increased the length and intensity of summer drought in many regions. This has increased the susceptibility of ecosystems to fires. Over the last decade fire frequencies have increased. In Indonesia primary forest was burnt, including the already reduced habitat of the Orang Utan.

Satellites have detected an earlier greening of vegetation in spring of up to 10 days and a later decline of a few days in autumn, indicating a longer growing season, to which vegetation immediately responds. Several studies indicate a polewards and altitudinal shift of the treeline border between trees and tundra and increases in the width of tree rings.

Phenology deals with the times of naturally occurring events like flowering, leaf opening, fruit ripening, leaf colouring and fall, migration and spawning. Such records go back hundreds of years (in the northern hemisphere) and now help us to assess long term changes e.g. although the Pied Flycatcher advanced its egg-laying date by 7 days, the main food source for their young, caterpillars of the Winter Moth, appear 14 days earlier than they did in the past. There now develops a mismatch which rapidly reduces breeding success of the bird. With the enormous complexity of the whole food webs in natural systems, it is highly likely that many more problems will occur.

Distributions will change depending on whether species can move with their shifting habitat or adapt to new conditions. In Western Europe, warmth-demanding plant species have become more abundant in the last 30 years. Endemic species have been replaced by more general species. In marine environments, some zooplankton and warm water fish species have shown a northward shift of 1000 km beginning in the 1980s southwest of Britain. A rapid northward expansion of the Mountain Pine Beetle in Canada has led to large scale pest invasions—which have large economic impacts.

Extreme weather events can cause rapid change; degradation is fast but recovery is much slower. The authors conclude that at a rise of over 2°C, warming risks rapidly increase, and a target of 2°C is too high. Even with small temperature changes there are disproportionately large changes in the frequency and magnitude of extreme events and consequently the unpredictable but devastating impacts to species and ecosystems. The target should be 1.5°C.

Calendar

March

- Fri. 4 AGM and members' slides and prints: "*Coastal Ecosystems*".
 Sun. 6 Excursion to the Upper Yarrowee Trail led by club members.
 Fri-Mon 11-14 SEANA Campout hosted by Upper Goulburn FNC at Snobs Creek.
 Sun. 20 FNCV Open Day @ Displays, Special Interest Groups.
 Tues. 22 Committee Meeting @ Les Hanrahan's, 7.30pm.

April

- Fri. 1 Michael Angove, Latrobe University, Bendigo: *Fire Research*. (postponed from last December).
 Sun. 3 TBA.

Supper Duty:

March: Volunteers please.

April: Volunteers please.

Committee

President Mr. Peter Dalman

Vice-President..... Mrs. Carol Hall

Secretary..... Mr. John Gregurke

Treasurer..... Mr. Bob Curtain

Mr. Greg Binns

Miss Helen Burgess.....

Miss Maureen Christie.....

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Mrs. Carol Hall (Editor).....

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Meetings are held at the Ballarat Horticultural Centre, cnr. Gregory & Gillies Sts (VicRoads 254 F8) on the first Friday of the month at 7.30pm.

Excursions: Depart from Ballarat Market Place (formerly Creswick Plaza) Creswick Rd., Ballarat (VicRoads 255 M10) at 9.30 am unless otherwise specified.

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